

Remarks

In the Office Action, claims 22, 44-45 and 82 were withdrawn from consideration as drawn to a non-elected invention. These claims were canceled above.

The Examiner maintained the rejections made in the earlier Office Action.

Claim 83 was again rejected under 35 USC 102(b) as anticipated by, or in the alternative, under 35 USC 103(a) as obvious over Pitcher et al. The Examiner contends that Pitcher et al. describes using an Eppendorf tube for centrifugation, and that an Eppendorf tube has "all properties of the centrifuge tube described in claim 83 and could be considered as an ultracentrifuge tube."

Claims 83-84 were again rejected under 35 USC 103(a) as unpatentable over Samadpour et al. in view of Pitcher et al.

Claim 92 was again rejected under 35 USC 103(a) as unpatentable over Pitcher et al., in view of Lanoil et al. and Burgoune.

On page 9 of the Office Action, the Examiner stated that he was unpersuaded by Applicants' earlier arguments "because the claims do not define what kind of centrifuge tube can be considered as an ultracentrifuge tube and what range of centrifugation speed can be considered as ultracentrifugation."

The Examiner further stated that "the features upon which applicant relies . . . are not recited in the rejected claim(s)."

The Examiner's rejections are traversed for the following reasons.

The claim language "ultracentrifuge tube" and "ultracentrifuging said sample in said ultracentrifuge tube" is readily recognized in the art as pertaining to a type of centrifugation that is different from standard centrifugation (in which an Eppendorf tube is typically used). For example, g-forces permitted for rotors used in Beckman-brand ultracentrifuge devices range from 53,900g to over 600,000g.

(Exhibit 1, Document PL-174S) In contrast, the g-forces permitted for rotors used in a standard high-speed centrifuge device (which is not an ultracentrifuge device) range from 29g to about 50,000g. (Exhibit 2, Beckman Chart) A comparison of the two exhibits reveals significantly different g-force and rpm ranges for the two types of devices, as follows:

ULTRACENTRIFUGE: 53,900g - 602,000g @ 19,000-80,000

rpm

STANDARD CENTRIFUGING: 29g to 50,400g @ 500-21,000

rpm

Thus, when Applicants' claims are properly interpreted in

light of the specification (which is consistent with the relevant art - see, for example, page 10, line 25 - "SW41 Ti (Beckman) rotor" and Example 1 - "35,000 rpm"), the claim terms "ultracentrifuge tube" and "ultracentrifuging said sample in said ultracentrifuge tube" are directed to those centrifugation devices (ultracentrifugation devices, that is) which operate at g-forces and rpm ranges applicable only to ultracentrifugation. No limitations from the specification need be read into the claims, as the Examiner suggested, to distinguish the claimed invention from Pitcher et al.

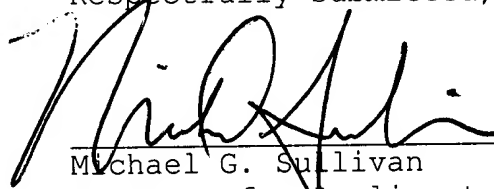
In contrast, Eppendorf tubes (as the Examiner contends are used by Pitcher et al. for centrifugation) are generally subjected to g-force and rpm levels well below those used for ultracentrifugation, as addressed above. For example, Exhibit 3, which is an advertisement for centrifuges which use Eppendorf tubes, reveals that the maximum g-force and rpm levels produced by such centrifuges is about 21,000g and 14,000 rpm, respectively. Indeed, plastic tubes (such as Eppendorf tubes) typically used for standard centrifugation would collapse or, at the very least, become significantly deformed by the forces generated by an ultracentrifuge device.

For the above reasons, the claims are patentable over Pitcher et al. alone or in combination with the other cited

references. Specifically, Pitcher et al. does not teach or suggest using the "ultracentrifugation" step and tube as recited in Applicants' claims. Additionally, the remaining references fail to compensate for the deficiencies of Pitcher et al. Accordingly, Applicants ask that the claim rejections be withdrawn.

In view of the foregoing, the present application is in condition for allowance. Reconsideration and favorable action are earnestly solicited.

Respectfully submitted,



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EXHIBIT 1

Rotors, Tubes & Accessories

For Beckman Preparative Ultracentrifuges

Beckman Rotors by Use

Rotor	Max. rpm	Max. g	k Factor	No. of Tubes x Nominal Tube Volume (mL.) ¹	Nominal Rotor Capacity (mL.)	For Use in Instruments Classified:	Page
Rotors for Centrifuging Extremely Small Particles							
Type 80 Ti	80,000	602,000	28	8 x 13.5	108	FGHR	3
VTi 80	80,000	510,000	8	8 x 5.1	40.8	HR	13
Type 75 Ti	75,000	502,000	35	8 x 13.5	108	F ² G ¹ HR	3
Type 70.1 Ti	70,000	450,000	36	12 x 13.5	162	F ² G ¹ HR	4
VTi 65	65,000	404,000	10	8 x 5.1	40.8	HR	13
VTi 65.1	65,000	400,700	13	8 x 13.5	108	HR	14
VTi 65.2	65,000	416,000	10	16 x 5.1	81.6	HR	14
Type 65	65,000	368,000	45	8 x 13.5	108	ABCDFGHQR	5
Type 50 Ti	50,000	226,000	78	12 x 13.5	162	BCDFGHQR	7
Rotors for Centrifuging Small Particles by Volume							
Type 70 Ti	70,000	504,000	44	8 x 38.5	308	G ¹ HR	4
Type 60 Ti	60,000	362,000	63	8 x 38.5	308	BF ² G ¹ HR	5
Type 55.2 Ti	55,000	340,000	64	10 x 38.5	385	GHR	6
Type 50.2 Ti	50,000	302,000	69	12 x 38.5	462	FGHR	6
VTi 50	50,000	242,000	36	8 x 39	312	HR	15
Type 45 Ti	45,000	235,000	133	6 x 94	564	FGHQR	8
Type 42.1	42,000	195,000	133	8 x 38.5	308	HR	9
Type 35	35,000	143,000	225	6 x 94	564	HR	10
Rotors for Differential Centrifugation							
Type 50.3 Ti	50,000	223,000	49	18 x 6.5	117	BCDFGHQR	7
Type 42.2 Ti	42,000	223,000	9	72 x 230 µl	16.5	GHR	9
Type 25	25,000	92,500	62	100 x 1	100	CDFGHR	11
Rotors for Centrifuging Large Particles							
Type 50	50,000	196,000	65	10 x 10	100	ABCDFGHQR	8
Type 40	40,000	145,000	122	12 x 13.5	162	ABCDFGHQR	10
Type 30	30,000	106,000	213	12 x 38.5	462	HR	11
Rotors for Concentrating Large Particles by Volume							
Type 21	21,000	60,000	402	10 x 94	940	HR	12
Type 19	19,000	53,900	951	6 x 250	1500	HR	12
Rotors for Isopycnic and Rate Zonal Gradients							
SW 65 Ti	65,000	421,000	46	3 x 5.0	15	BCDFGHQR	15
SW 60 Ti	60,000	485,000	45	6 x 4.4	26.4	GHR	16
SW 55 Ti	55,000	368,000	48	6 x 5.0	30	BCDFGHQR	16
SW 50.1	50,000	300,000	59	6 x 5.0	30	ABCDFGHQR	17
Rotors with Long Slender Tubes for Rate Zonal Gradients							
SW 41 Ti	41,000	288,000	124	6 x 13.2	79.2	CDFGHR	17
SW 40 Ti	40,000	285,000	137	6 x 14	84	GHR	18
SW 28.1	28,000	150,000	276	6 x 17	102	CDFGHR	20
Rotors for Large Volume Density Gradients							
SW 30.1	30,000	124,000	138	6 x 8	48	BCDFGHR	19
SW 30	30,000	124,000	138	6 x 20	120	BCDFGHR	18
SW 28	28,000	141,000	245	6 x 38.5	231	CDFGHR	19
SW 25.1	25,000	90,400	337	3 x 34	102	ABCDFGHQR	20
Continuous Flow and Zonal Rotors							
Rotors	Max. rpm	Max. g	Capacity (mL)	Typical Sample Volume (mL)	Size Range of Particles Separated (S)	For Use in Instruments Classified:	Page
CF-32 Ti	32,000	102,000	430	> 1000	> 50	BCDFGH	22
Z-60	60,000	256,000	330	20	< 20	FGH	23
Ti-14	48,000	172,000	665	20-50	20-100	BCDFGHQ	24
Ti-15	32,000	102,000	1675	50-200	> 100	BCDFGHQ	25

1. Smaller volume tubes may also be used with adapters and/or spacers. Check the rotor listing for more information.
2. Class F, Model L2-50 and Model L3's only
3. Class G, Model L3's only

BECKMAN**Relative Centrifugal Fields ($\times g$) at r_{\max} for J Rotors in J2 Series Centrifuges (at Various Speeds)**

Entries in this table are calculated from the equation $RCF = 1.12r(RPM/1000)^2$ and are rounded to three significant digits. The centrifugal force at a given radius in a rotor is a function of run speed. Comparisons of forces between different rotors are made by comparing the rotors' RCFs. When rotational speed is selected so that identical samples are subjected to the same RCF in two different rotors, the samples have then been subjected to the same maximum force.

ROTOR NAME AND r_{\max} IN MILLIMETERS																			
RPM	JA-21 102	JA-20 108	JA-20.1 98*	JA-20.1 115*	JCF-Z 81†	JCF-Z 89†	JA-20 93	JA-18 132	JA-18.1 112†	JA-18.1 116†	JA-17 123	JA-14 137	JS-13.1 140	JA-12 144	JA-10 158	JS-7.5 165	JS-4.3 204	JE-6B 86**	
500	29	30	27	32	23	25	26	37	31	32	34	38	39	40	44	46	57	24	
1 000	114	121	110	129	91	100	104	148	125	130	138	153	157	161	177	185	228	96	
1 500	257	272	247	290	204	224	234	333	282	292	310	345	353	363	398	416	514	217	
2 000	457	484	439	515	363	399	417	591	502	520	551	614	627	645	708	739	910	385	
2 500	714	756	686	805	567	623	651	924	784	812	861	959	980	1 010	1 110	1 160	1 430	602	
3 000	1 030	1 090	990	1 160	816	897	937	1 330	1 130	1 170	1 240	1 380	1 410	1 450	1 590	1 660	2 060	870	
3 500	1 400	1 480	1 340	1 580	1 110	1 220	1 280	1 810	1 540	1 590	1 690	1 880	1 920	1 980	2 170	2 260	2 800	1 180	
4 000	1 830	1 940	1 760	2 060	1 450	1 590	1 670	2 370	2 010	2 080	2 200	2 460	2 510	2 580	2 830	2 960	3 660	1 540	
4 500	2 110	2 240	2 030	2 380	1 680	1 840	1 930	2 730	2 320	2 400	2 550	2 840	2 900	2 980	3 270	3 420	4 220	1 780	
4 800	2 310	2 450	2 220	2 610	1 840	2 020	2 110	2 990	2 540	2 630	2 790	3 110	3 180	3 270	3 580	3 740		1 950	
5 000	2 860	3 020	2 740	3 220	2 270	2 490	2 600	3 700	3 140	3 250	3 440	3 840	3 920	4 030	4 420	4 620		2 410	
5 500	3 460	3 660	3 320	3 900	2 740	3 020	3 150	4 470	3 790	3 930	4 170	4 640	4 740	4 880	5 350	5 590		2 910	
6 000	4 110	4 350	3 950	4 640	3 270	3 590	3 750	5 320	4 520	4 680	4 960	5 520	5 640	5 810	6 370	6 650		3 470	
6 500	4 830	5 110	4 640	5 440	3 830	4 210	4 400	6 250	5 300	5 490	5 820	6 480	6 620	6 810	7 480	7 810			
7 000	5 600	5 930	5 380	6 310	4 450	4 880	5 100	7 240	6 150	6 370	6 750	7 520	7 680	7 900	8 670	9 060			
7 500	6 430	6 800	6 170	7 250	5 100	5 610	5 860	8 320	7 060	7 310	7 750	8 630	8 820	9 070	9 950	10 400			
8 000	7 310	7 740	7 020	8 240	5 810	6 380	6 670	9 460	8 030	8 310	8 820	9 820	10 000	10 300	11 300				
8 500	8 250	8 740	7 930	9 310	6 550	7 200	7 530	10 700	9 060	9 390	9 950	11 100	11 300	11 700	12 800				
9 000	9 250	9 800	8 890	10 400	7 350	8 070	8 440	12 000	10 200	10 500	11 200	12 400	12 700	13 100	14 300				
9 500	10 300	10 900	9 910	11 600	8 200	9 000	9 400	13 300	11 300	11 700	12 400	13 800	14 200	14 600	16 000				
10 000	11 400	12 100	11 000	12 900	9 100	10 000	10 400	14 800	12 500	13 000	13 800	15 300	15 700	16 100	17 700				
10 500	12 600	13 300	12 100	14 200	10 000	11 000	11 500	16 300	13 800	14 300	15 200	16 900	17 300	17 800					
11 000	13 800	14 600	13 300	15 600	11 000	12 100	12 600	17 900	15 200	15 700	16 700	18 600	19 000	19 500					
11 500	15 100	16 000	14 500	17 000	12 000	13 200	13 800	19 600	16 600	17 200	18 200	20 300	20 700	21 300					
12 000	16 500	17 400	15 800	18 600	13 100	14 400	15 000	21 300	18 100	18 700	19 800	22 100	22 600	23 200					
12 500	17 900	18 900	17 200	20 100	14 200	15 600	16 300	23 100	19 600	20 300	21 500	24 000	24 500	25 100					
13 000	19 300	20 400	18 600	21 800	15 300	16 800	17 600	25 000	21 200	22 000	23 300	25 900	26 500	27 100					
13 500	20 800	22 000	20 000	23 500	16 500	18 200	19 000	26 900	22 900	23 700	25 100	28 000	28 600	29 200					
14 000	22 400	23 700	21 500	25 200	17 800	19 500	20 400	29 000	24 600	25 500	27 000	30 100	30 700	31 300					
14 500	24 000	25 400	23 100	27 100	19 100	21 000	21 900	31 100	26 400	27 300	28 900	32 200	32 800	33 400					
15 000	25 700	27 200	24 700	29 000	20 400	22 400	23 400	33 300	28 200	29 200	30 900	34 300	34 900	35 500					
15 500	27 500	29 100	26 400	30 900	21 800	23 900	25 000	35 500	30 100	31 200	33 100	36 600	37 200	37 800					
16 000	29 300	31 000	28 100	33 000	23 200	25 500	26 700	37 800	32 100	33 300	35 300	38 900	39 500	40 100					
16 500	31 100	32 900	29 900	35 100	24 700	27 100	28 400	40 200	34 200	35 500	37 500	41 200	41 800	42 400					
17 000	33 000	35 000	31 700	37 200	26 200	28 600	30 100	42 700	36 300	37 600	39 800	43 600	44 200	44 800					
17 500	35 000	37 000	33 600	39 500	27 800	30 500	31 900	45 300	38 400	39 800	42 100								
18 000	37 000	39 200	35 600	41 700	29 400	32 300	33 700	47 900	40 500										
18 500	39 100	41 400	37 600	44 100	31 000	34 100	35 600												
19 000	41 200	43 700	39 600	46 500	32 700	36 000	37 600												
19 500	43 400	46 000	41 700	49 000	34 500	37 900	39 600												
20 000	45 700	48 400	43 900	51 500	36 300	39 900	41 700												
20 500	48 000																		
21 000	50 400																		

* Inner and outer rows.
† JCF-Z with small pellet core has an r_{\max} of 81 mm; with all other JCF-Z cores r_{\max} is 89 mm.
‡ The JA-18.1 rotor can spin tubes at two different angles: 45° and 25°. The 45° angle configuration gives an r_{\max} of 116 mm. The 25° configuration gives an r_{\max} of 112 mm.

** g-force at elutriation boundary.

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** g-force at elutriation boundary.

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EXHIBIT 3

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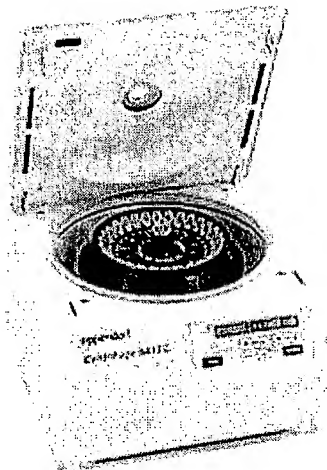
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Brinkmann Centrifuges



Eppendorf® Microcentrifuge Model 5417C

PRODUCT DESCRIPTION

- Variable-speed motor spins up to 14,000rpm/20,800 x g
- For added safety, a sensor automatically displays maximum speed for the installed rotor

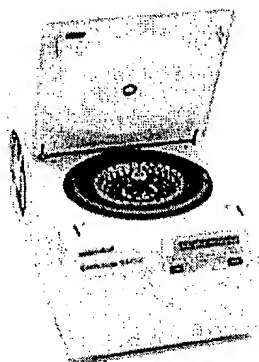
At only 13 inches in width this model is perfectly suited for the crowded laboratory or the space limited cold room. The maintenance-free, brushless motor is capable of producing the speed and force needed for most every microcentrifuge tube application. Speed setting and display is in either rpm or rcf increments. The adjustable-speed "momentary" button allows for quick spins. The unit operates at a quiet level of less than 60dB. Soft Start/Stop function protects delicate samples. For user safety, an automatic rotor detection system senses the rotor and indicates maximum permissible speed. RS-232 interface for computer control or data recording.

Use with any of four interchangeable, autoclavable rotors with lids. Rotors not included. Browse the Centrifuge section for info on rotors and other accessories.



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Eppendorf® Refrigerated Microcentrifuge Model 5417R

PRODUCT DESCRIPTION

- Temperature control from -9 to 40°C
- Large LED display and membrane keypad

Compact microcentrifuge is ideal anywhere space is limited (only 13 inches wide). Unit accelerates to 14,000 rpm and 20,800 x g in less than 15 seconds. Brushless motor is whisper quiet, and internal fan keeps unit cool. Timer control accepts settings up to 99 minutes and includes hold function.

All functions are microprocessor controlled for precise, reproducible results. RS-232 interface lets you link control to your computer. Soft Start/Stop function gently handles fragile samples, loose pellets or microcentrifuge filter tubes.

The 5417R offers precise temperature control to -9°C. Environmentally friendly, CFC-free R-134a refrigerant. "Fast Cool" function brings rotor bowl temperature down from ambient to 4°C in less than 20 minutes.

Safety features include the fully shielded rotor bowl and dual lid locks to provide maximum protection to the end user. In addition, all rotors are autoclavable and supplied with a cover to reduce or contain hazardous aerosols. Meets IEC 1010 safety standards.

Accepts the four autoclavable quick-release rotors listed in table (on the previous page) Rotors come with lids to minimize air turbulence and provide spill control. Microprocessor automatically senses which rotor is installed and displays the rotor's maximum allowable speed. Order rotors separately. Order adapters to accept other tube sizes. Browse the Centrifuge section for rotors and accessories.



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two interchangeable rotors, ordered separately. Two year warranty. Model 5415D accepts two interchangeable rotors with easy, snap-on polypropylene (PP) lids. The 24-place rotor can also be used with the aerosol-tight lid for protection against harmful aerosols. The see-through polycarbonate (PC) lid allows the rotor to be viewed for possible spills. All rotors are autoclavable at 121°C. Rotors are sold separately.

SPECIFICATIONS

Max. Speed 13,200rpm

Max. RCF 16,110 x g

Rotor Capacity 24 x 1.5-2.0ml tubes

36 x 500µL tubes

Timer 30 seconds to 99 minutes

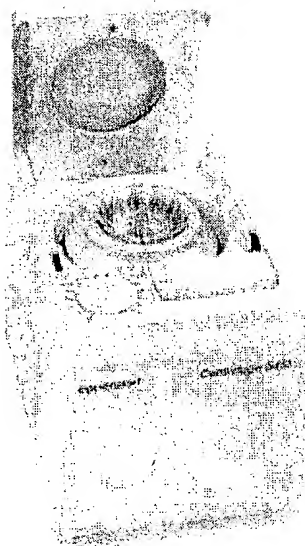
Dimensions 9"H x 12"D x 9"W

Weight 17lbs.



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Eppendorf® Fixed Speed Microcentrifuge 5410

PRODUCT DESCRIPTION

- Covered rotor is included
- Compact design is practical for benchtop use or in the cold room

An outstanding value! Comes complete with autoclavable 12-place 1.5-2.0mL rotor with cover-cover minimizes air turbulence and provides spill control. Accommodates 0.25 to 0.4mL microcentrifuge tubes with available adapters and up to 4 Aerosol-Tight Capsules.

"Short" function lets you perform quick reproducible runs. Rotary timer lets you perform timed runs up to 30 minutes. "Hold" function allows you to spin even longer. Quiet motor (less than 60dB) spins at 14,000 rpm and 12,800 x g Maximum speed is reached in only 10

seconds. Meets or exceeds ISO 9001 quality standards, and conforms to International Safety Standard IEC 1010.



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Eppendorf® 5810/5810R High Capacity Centrifuges

PRODUCT DESCRIPTION

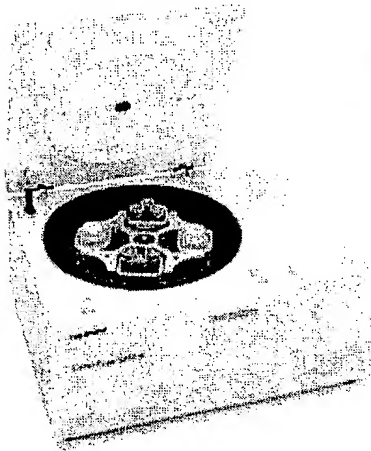
- Versatile high capacity swing-bucket rotor
- Spin tubes from 0.25 to 250mL
- Rotor design allows high throughput
- Use with modular adapters to spin up to 36 x 15mL or 12 x 50mL or 16 microplates with the same rotor Combining capacity and comfort.

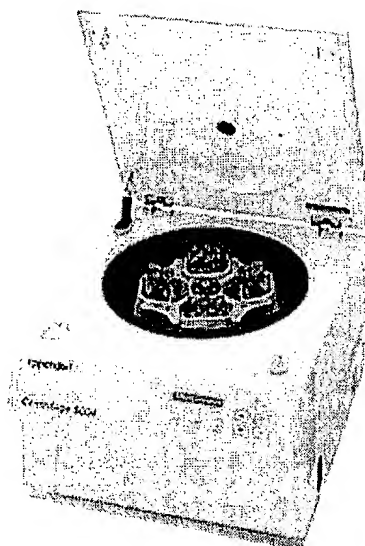
One of the most innovative centrifuges in the 1000mL class. The 5810 and its refrigerated counterpart the 5810R utilize a high capacity swing-bucket rotor with four 250mL buckets. Choose from a variety of easy to stack modular adapters that allow you to customize for both the length and diameter of the tubes specific to your application. Available microplate buckets hold up to 16 x 96-well plates. For more dedicated applications the 5810/5810R can be used with the any of five rotors listed on the opposite page for the 5804/5804R. User-friendliness abounds with such great features as ergonomic access height for easy loading, motorized lid latch for effortless opening and a low noise level for a quieter laboratory environment. Rotors not included.



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Eppendorf® Multipurpose Centrifuge models 5804/5804R

PRODUCT DESCRIPTION

- Easily accepts tubes from 0.25 to 100mL
- Flexibility of five interchangeable rotors with modular adapters
- Ergonomic, low-profile design

Centrifuge up to 16 x 15mL, 8 x 50 mL conical or 30 microcentrifuge tubes per run for a wide range of applications. Whether you're doing molecular biology, clinical chemistry or hematology, by ordering any of the five available rotor types (sold separately) combined with a wide variety of adjustable length adapters (also sold separately), you have a system built by you for you.

Performance features you've come to expect from the industry leader

Variable speed, maintenance-free motor spins up to 14,000 rpm (20,800 x g). Time, temperature, speed/g-force and radius values can be quickly entered on the easy-to read digital display. Automatic g-force conversion eliminates tedious calculations and ensures run accuracy. 34 user defined programs allow quick parameter entry and ensure reproducibility. Short spin feature allows momentary spins at adjustable speeds. 10 acceleration and braking rates can be set to protect sensitive samples.

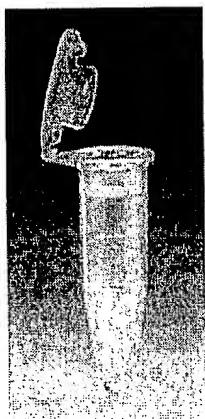
Refrigerated model provides accurate temperature control with CFC-free refrigeration. Fast Cool function pre-cools chamber in as little as 15 minutes. Non-refrigerated model is ventilated and designed for cold room use if necessary.

Low profile body has only a 11 inch access height for easy sample loading. Automatic rotor recognition senses rotor type to set maximum allowable speed. Rotor imbalance cut-off prevents costly sample damage. Self diagnostics alert improper operating conditions and even expedite service if needed. Rotor not included. Browse the Centrifuge section for rotors and other accessories.



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Eppendorf® Snap-Cap Microcentrifuge Tubes

PRODUCT DESCRIPTION

Safe-Lock tubes have positive-sealing cap lock for extra margin of safety, yet open easily with one hand. Flex-Tubes have flexibly attached caps that snap on tightly with one hand (not recommended for boiling). All polypropylene (PP) tubes are autoclavable to 121°C. All tubes have writing spot.



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